November 30, 2001

Mrs. Gwen B. Zervas, P. E.
Case Manager
New Jersey Department of Environmental Protection (NJDEP)
Bureau of Federal Case Management
Division of Responsible Site Remediation
CN028
Trenton, New Jersey 08625-0028

Subject: L.E. Carpenter & Company, Wharton, New Jersey ~ NJD002168748
Response to Comments on and Amendment to *Workplan to Evaluate Free Product Remedial Strategies,* (RMT, November 2001)

Dear Mrs. Zervas:

As a follow-up to your emailed comments dated November 20, 2001 and our conference call of November 20, 2001, we have prepared the following responses that constitute an Amendment to the above-mentioned Workplan.

1. Comment: Page 2-1: The text states that soils "suspected of lead contamination" will be stockpiled. How is this to be determined? Similarly soils "potentially contaminated with DEHP and BTEX" will be placed on the bench. Is this to be done by simple visual inspection (i.e. Whether product is visible)? In addition, does this procedure introduce the possibility of spreading contamination to the bench area, or is it presumed that that depth will already be contaminated? Finally, as we discussed, it is recommended that it would be more conservative to place the soils on a plastic liner to ensure that contamination is not inadvertently spread.

Response: Soils will be visually examined during excavation to determine the potential presence for lead as well as product. Colors indicative of waste identified during the lead investigation conducted earlier in November of this year will be used to determine the potential for elevated levels of lead. Visible free-product and the use of a photo-ionization detector and explosimeter will aid in determining the potential presence of DEHP and BTEX products. Shallow excavated soils will be placed on a layer of plastic on the ground surface. The bench wall(s) created in the excavation will also be covered with plastic to prevent the spread of contamination from saturated soils or free product released. Excavation into the saturated zone will also be minimized.

2. Comment: Page 2-2, Task 2: If the test pits are to be backfilled with washed stone, what will happen to the contaminated soils? Will the soils be shipped off-site as IDW, or will they simply be left on site, or backfilled? The disposition of these soils should be addressed in the work plan.

Response: It is anticipated that less than one cubic yard of washed stone will be placed as a "filter pack" for each fluid recovery well installation. Given the site terrain and the fact that several 5-gallon buckets of soil will be removed from each pit for testing, the insertion of the washed stone will result in a relatively unnoticeable amount of mounding from backfilling of the benched material at each test pit and will eliminate the need for off-site disposal.

3. Comment: Page 2-2, Task 2: Product thicknesses in the proposed recovery wells may not be representative of the effect of trenches, which would presumably use horizontal piping.

How will the final report of the pilot testing field results handle this issue?

Response: The primary purpose of the product recovery wells is to provide a mechanism to collect sufficient quantities of free product for testing. The resulting well construction is also intended to determine if a substantial increase in the effective surface area of the well will induce greater free product flow. These observations, as well as those made during trench excavation, will help to determine the efficacy of collector trench installation.

4. Comment: Page 2-2, Task 3: The text states that sampling for metals "may be necessary." How will this be determined? As mentioned over the telephone, we believe that the testing for RCRA metals should be a required part of the work plan.

Response: Soil samples collected from the test pits will be analyzed for RCRA metals. The analytical testing may be performed during the thermal bench testing of the material. If this testing is not included in the bench testing protocol, RMT will arrange for analysis of the samples for RCRA metals prior to bench testing of the material.

5. Comment: Page 2-2, Task 3: The text gives very little detail on the bench scale study. Typically, work plans of this sort give more information about the testing apparatus and specific analysis methods. In addition, it should be clear what parameters will be monitored by the Combustible Emissions Monitor (CEB). Will the CEB give constant minimum readings below the appropriate safety and emissions criteria, or will measurements be taken at certain intervals? At what temperature(s) will the bench tests be run? For a number of reasons, the work plan should provide a full description of what is intended and expected, both from a regulatory point of view, and because it is important that all parties agree on these specifics beforehand, in an effort to maximize time and get everyone's buy in on the goals and results.

Response: Details on the bench scale investigations for Low Temperature Thermal Desorption (LTTD) are presented in Attachments A and B.

6. Comment: Page 2-3, Task 3: The text needs to be clearer about what other technologies would be evaluated and how. If this would be the subject of a work plan addendum, it would be sufficient to note this.

Response: Field excavation observations and follow-up geotechnical testing will lead to an early determination as to the practicability of soil removal. Simultaneous bench-scale testing of low-temperature thermal desorption will determine if excavated soils can be effectively treated on site. If either of those decisions proves negative we will prepare a brief technical memorandum summarizing those findings. Also, if excavation proves to be impracticable RMT will focus evaluations on *in situ* source treatment technologies, such as chemical oxidation, as well as hydraulic containment and product removal technologies. If excavation is viable, but thermal proves ineffective, we will evaluate other ex-situ technologies including soil washing as well as off-site disposal. As illustrated in the matrix of potential technologies in Figure 2 of the *Workplan*, RMT has considered the potential options as well as other technologies needed to support a particular option. The scope of data collection planned is intended to allow for evaluation of additional alternatives as that need arises. The attached project schedule indicates specific milestones as well as overlapping of various evaluation tasks.

7. Comment: Page 2-3, Task 4: In a number of places, the text states that "up to 3" samples

will be collected. What will determine the number of samples? At a minimum, we recommend that 3 samples be taken.

Response: RMT generally concurs with the comment. Where the *Workplan* states that "up to three" samples will be obtained, a minimum of three samples will be collected.

8. Comment: As we discussed, a project specific Health and Safety Plan must be submitted and in place before field work begins. In addition, as we discussed, the original Health and Safety plan should be updated, if needed, and submitted.

Response: An updated Health and Safety Plan is included with this response letter as Attachment C.

9. Comment: The final version of the work plan should provide a detailed schedule outlining key activities and anticipated completion dates.

Response: A detailed schedule for this investigation is provided as Attachment D. The Schedule is broken into three major components: (1) the field investigation, evaluation and reporting on excavation and thermal treatment (2) the optional investigation and reporting on alternative technologies, and (3) the preparation of a Remedial Action Plan to implement the selected alternative. Critical to the maintenance of this schedule will be the ability of outside laboratories and investigators to provide timely analytical and bench-scale testing results. In addition, it is possible that unforeseen impediments to evaluation of a particular technology may occur that may make revision of the schedule necessary. RMT will keep NJDEP and EPA informed of any factors that may affect this schedule.

Please let us know as soon as possible whether or not you concur with this addendum. We plan on initiating the field work on December 10, 2001.

Sincerely,

RMT, Inc.

Nicholas Clevett
Project Manager

Attachments: A - Soil Thermal Treatment Analysis
B - Bench Scale Thermal Desorption Treatability Study Information (Hazen)
C - Project Health and Safety Plan
D - Project Schedule

cc: Stephen Cipot, USEPA
Cristopher Anderson, Polyone
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ATTACHMENT A
L.E. Carpenter
Soil Thermal Treatment Analysis

RMT will undertake a multi-phased test program to determine the effectiveness of low temperature thermal desorption (LTTD) technology. As shown on the attached schedule this evaluation will be broken into phases depending on the results of each phase. RMT intends to use Hazen Laboratories of Golden, Colorado to perform the thermal analyses. At each of the three test pits excavated, RMT will collect a composite sample representative of free-product containing soil. Samples will be containerized in a 5 gallon tab-sealed container which will then be placed in a sealed overpack for shipment to Hazen. Duplicate samples will also be collected in each pit for geotechnical and chemical characterization.

Phase Ia - Physical characterization: Three (3) samples from each of the test pits will be submitted to RMT's geotechnical laboratory for analysis as follows:

- Cohesion Limits
- Sticky Limits
- Shrinkage Limits
- Plastic Limits
- Liquid Limits
- Grain-size distribution

The objective of these analyses is to provide information necessary to evaluate procedures and equipment necessary to excavate and process site soils as well as to identify any physical constraints or modification necessary for the treatment system.

Phase Ib – Chemical Characterization: One (1) composite samples will be obtained specifically for pre-treatment testing of VOCs and SVOC content. Additionally three (3) samples from each pit will be submitted for analysis of eight (8) RCRA metals. These results will be used to evaluate LTTD and, potentially, alternative treatment technologies. Severn Trent Laboratories will perform this analytical work.

Phase II – Evaluation of Desorption Potential: If RMT determines that excavation of soils for ex-situ treatment appears viable, the three (3) soil samples submitted to Hazen Laboratories will be tested for:

- Proximate Analysis - ASTM D5142
- Ultimate Analysis - ASTM D3176
- Higher Heating Value - ASTM D1989 via automatic bomb calorimeter
- Ash Fusion Temperature - ASTM D1857 (oxidizing and reducing)
- Moisture Content - Graimetric@105 C
- Ash Content - ASTM D5142

RMT shall utilize the results of these initial screening tests of representative soil samples to make qualitative judgements as the appropriate material handling, thermal processor type and operating parameters. The proximate analysis shall determine moisture content, volatile matter, and ash, and

the calculation of fixed carbon content. The ultimate analysis will provide an elemental analysis of the soil matrix (carbob, nitrogen, oxygen, nitrogen, sulfur, chlorine and ash).

In addition, testing shall be performed to confirm the optimum operating temperature of the thermal process for effective treatment and removal of the contaminants from the soil. The tests shall be conducted using a bench-scale batch furnace/oven. A composite sample mix of soil shall be prepared from the samples taken from the three test pits. One (1) test shall be conducted at each of the following temperatures; 450°F, 600°F and 750°F.

The resulting treated soil (ash) from each batch shall be analyzed for VOC and SVOC content (EPA Methods 8260 and Method 8270). If the testing indicates that the LTTD process will meet the site soil clean-up criteria, then additional testing to evaluate specific design criteria will proceed as follows:

Phase III – LTTD Off-Gas Characterization: One additional thermal treatment run for a sample from each of the three test pits will be performed by Hazen to collect and analyze off-gasses generated. The tests shall be conducted using two bench-scale batch furnaces/ovens in series. The first oven will act as the LTTD and the second oven will be used to oxidize the off-gasses. In a full-scale operation a baghouse would be placed prior to the oxidizer, which will not occur during the bench test. During the bench test, gas samples will be collected from the second oven to determine efficiency of the oxidizer and also to determine design requirements for the baghouse depending upon the particulates in the off-gas (from the second oven). Gas samples will be prepared for analysis of particulate (PM), hydrogen chloride and free chlorine (HCl/Cl_2), mercury (Hg), semi-volatile metals (SVM) and low volatile metals (LVM) emissions. In addition, a continuous emissions monitoring system (CEMS) will be used to monitor carbon monoxide (CO), total hydrocarbon (HC), and oxygen (O_2) in the stack gases.

The objective of these analyses is to determine whether the full-scale system will operate with a baghouse and oxidizer for air pollution control or if an additional control such as a scrubber is necessary.

The following sampling methods will be used during the test:

- A combined USEPA Method 5 and USEPA Method 26A sampling train will be used to sample the stack gas for measurement of PM and HCl/Cl_2.
- A USEPA Method 29 sampling train will be used to sample the stack gas for measurement of mercury, SVM, and LVM.
- A CEMS will be used to monitor the concentrations of CO, HC and oxygen in the stack gas.

Phase IV - Leachable Metals Analysis: A sample of the treated soil collected from each of the three thermal tests conducted in Phase III will be analyzed for leachability of the eight (8) RCRA metals using Method 8260 SPLP analysis.

RMT's objective is to utilize the results of these tests of representative soil samples to make qualitative judgements as to the appropriate material handling, thermal processor type and operating parameters. The results will be used to assess the potential pollutants that would result from the thermal treatment process. Working in conjunction with heat and material balance modeling calculations, criteria pollutant predictions such as particulate, hydrocarbons, metals and acid gases will be estimated. This information will be used to assess the appropriate air pollution

control technology. The results from this analysis shall also be used to prepare preliminary specifications for soliciting bids from qualified thermal treatment contractors should the LTTD method be selected as the preferred treatment alternative.